UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,656	09/29/2003	Takehiro Nakamura	15689.49.2	2350

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Workman Nydegger
1000 Eagle Gate Tower
60 East South Temple
Salt Lake City, UT 84111

EXAMINER
GREY, CHRISTOPHER P

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _23 November 2009_.

2a) ☒ This action is **FINAL**.　　　　2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _18-26_ is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _18-26_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a) ☐ All　b) ☐ Some * c) ☐ None of:

　　　1. ☐ Certified copies of the priority documents have been received.

　　　2. ☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   In view of applicant's amendment filed on 11/23/09, the status of the application is still pending with respect to claims 18-26.

Response to Arguments

2.   Applicant's arguments with respect to claims 18-26 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4.   Claims 18-26 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 18, 21, 23 and 25 line 2 recites "a block". However, paragraphs 0009 and 0240-0250 show a frame, and performing various functions on this frame. These claims fail to comply with the written description requirement. Claims 19, 20, 22, 24 and 26 depend from these claims and are therefore rejected for the same reasoning.

5.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

6.   Claims 18-26 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

Claim 18 recites the limitation "said pilot symbols" in line 4-5 and 7. There is

insufficient antecedent basis for this limitation in the claim. "said pilot symbols" is

different than "known pilot symbols" recited in lines 2-3 of claim 18.

Claim 19-26 are rejected for similar reasoning as given above.

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

8.   Claims 18-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Jasper et al. (US 5,241,544), hereinafter referred to as Jasper, in view of Matsumoto et

al. (US 5912931), hereinafter referred to as Mat in view of Baker et al. (US 5067139),

hereinafter referred to as Baker.

Regarding claim 18,   Jasper discloses means for transmitting **(fig 3 shows a**

transmitter), on a transmitting side **(fig 3 shows a transmitter)**, a block **(fig 2 shows a**

block of data) consisting of a plurality of known pilot symbols **(fig 2, 203 and Col 3 lines 54-56, "predetermined pilot symbols (203) inserted at selected intervals")** at every slot **(fig 2 shows a typical timeslot, where data, pilot and sync symbols are included)**, a predetermined number of said slots forming a frame **(fig 2, and Col 3 lines 48-50, which teaches TDM, which is known in the art to have a predetermined number of slots forming a frame)**;

means for receiving, on a receiving side **(Col 3 lines 51-53 shows a receiver)**, said blocks each consisting of said pilot symbols **(fig 2, 203 and Col 3 lines 54-56, "predetermined pilot symbols (203) inserted at selected intervals")**; and

wherein said block **(fig 2 shows a block of data)** consisting of said pilot symbols **(fig 2, 203 and Col 3 lines 54-56, "predetermined pilot symbols (203) inserted at selected intervals")** consists of a known pilot symbol portion **(fig 2, 203 and Col 3 lines 54-56, "predetermined pilot symbols (203) inserted at selected intervals")** and a sync word portion for frame alignment **(fig 2, see sync data according to shade and Col 3 lines 51-53, "Sync symbols 202 are provided at the beginning of the time slot to allow a receiver to determine exact position in the symbol stream…")**.

Jasper does not specifically disclose means for carrying out coherent detection using the received blocks and wherein said means for carrying out coherent detection carries out the coherent detection using said known pilot symbol portion.

Mat discloses means for carrying out coherent detection **(Col 7 lines 3-6 shows**

coherent detectors) by using the received blocks **(Col 7 lines 3-11, coherent**

detectors using known symbols, such as the unique word and pilot symbols)

wherein said means for carrying out coherent detection **(Col 7 lines 3-6 shows**

coherent detectors) carries out the coherent detection using said known pilot symbol

portion **(Col 7 lines 3-11, coherent detectors using known symbols, such as the**

unique word and pilot symbols).

It would have been obvious to one of the ordinary skill in the art at the time of the

invention was disclosed to modify the process of receiving of Jasper, as taught by Mat,

since stated in Col 7 lines 8-19 of Mat, that such a modification will provide a signal

detection using coherent detection and employing a fading estimation scheme that

takes into account the generation process of the fading frequency selectivity and exploit

the benefit of the offset pilot location thus overcoming the disadvantages of prior art as it

pertains to frequency selective fading.

Although Mat discloses carrying out coherent detection using sync symbols **(Col**

7 lines 3-11, coherent detectors using known symbols, such as the unique word

and pilot symbols), the combined teachings of Jasper and Mat do not explicitly

suggest employing, after establishing the frame alignment using said sync word portion,

said sync word portion for the coherent detection.

Baker discloses employing, after establishing the frame alignment **(fig 1, where**

the mixing of the received signal with the NCO is equivalent to frame

synchronization, and this mixing is the first process done in the coherent

detection, thus the completion of coherent detection is achieved after this

process of synchronization) using said sync word portion **(Col 2 lines 30-35, where**

the sync word is used for frame synchronization), said sync word portion **(Col 2**

lines 30-35, where the sync word is used for frame synchronization) for the

coherent detection **(see fig 1 for coherent detection)**.

It would have been obvious to one of the ordinary skill in the art at the time of the

invention was disclosed to modify the coherent detector disclosed by Mat, as taught by

Baker, since stated in Col 1 lines 30-35 of Baker, that such a modification will fulfill the

need for a coherent detector that can determine the initial constellation point rapidly and

track the rotating constellation.

Regarding claim 19,   Jasper discloses wherein said pilot symbol portion

and said sync word portion are transmitted alternately in said block **(fig 2, notice sync**

portion occurs in 202, and then pilot portion is transmitted throughout the rest of

the block, hence alternately).

Regarding claim 20,   Jasper discloses a radio communication system that

carries out radio communications **(Col 1 lines 60-62 shows RF)** between a base

station **(fig 3 shows a transmitter in an RF, equated as a BS)** and a mobile station

(Col 3 lines 51-53 shows receiver equated as a mobile station in an Radio

network) on a mobile communication network using the digital radio communication

system as claimed in claim 18.

Regarding claim 21,   Jasper discloses means for receiving a block **(fig 2 shows a**

block of data) consisting of a plurality of known pilot symbols **(fig 2, 203 and Col 3**

lines 54-56, "predetermined pilot symbols (203) inserted at selected intervals"),

which has been transmitted at every slot **(fig 2 shows a typical timeslot, where data,**

pilot and sync symbols are included), a predetermined number of said slots forming

a frame **(fig 2, and Col 3 lines 48-50, which teaches TDM, which is known in the art**

to have a predetermined number of slots forming a frame); and

wherein said block **(fig 2 shows a block of data)** consisting of said pilot symbols

(fig 2, 203 and Col 3 lines 54-56, "predetermined pilot symbols (203) inserted at

selected intervals") consists of a known pilot symbol portion**(fig 2, 203 and Col 3**

lines 54-56, "predetermined pilot symbols (203) inserted at selected intervals")

and a sync word portion for frame alignment **(fig 2, see sync data according to shade**

and Col 3 lines 51-53, "Sync symbols 202 are provided at the beginning of the

time slot to allow a receiver to determine exact position in the symbol stream…").

Jasper does not specifically disclose means for carrying out coherent detection

using the received blocks and wherein said means for carrying out coherent detection

carries out the coherent detection using said known pilot symbol portion.

Mat discloses means for carrying out coherent detection **(Col 7 lines 3-6 shows**

coherent detectors) by using the received blocks **(Col 7 lines 3-11, coherent**

detectors using known symbols, such as the unique word and pilot symbols)

wherein said means for carrying out coherent detection **(Col 7 lines 3-6 shows coherent detectors)** carries out the coherent detection using said known pilot symbol portion **(Col 7 lines 3-11, coherent detectors using known symbols, such as the unique word and pilot symbols)**.

It would have been obvious to one of the ordinary skill in the art at the time of the invention was disclosed to modify the process of receiving of Jasper, as taught by Mat, since stated in Col 7 lines 8-19 of Mat, that such a modification will provide a signal detection using coherent detection and employing a fading estimation scheme that takes into account the generation process of the fading frequency selectivity and exploit the benefit of the offset pilot location thus overcoming the disadvantages of prior art as it pertains to frequency selective fading.

Although Mat discloses carrying out coherent detection using sync symbols **(Col 7 lines 3-11, coherent detectors using known symbols, such as the unique word and pilot symbols),** the combined teachings of Jasper and Mat do not explicitly suggest employs, after establishing the frame alignment using said sync word portion, said sync word portion for the coherent.

Baker discloses employs, after establishing the frame alignment **(fig 1, where the mixing of the received signal with the NCO is equivalent to frame synchronization, and this mixing is the first process done in the coherent detection, thus the completion of coherent detection is achieved after this process of synchronization)** using said sync word portion **(Col 2 lines 30-35, where**

the sync word is used for frame synchronization), said sync word portion **(Col 2**

lines 30-35, where the sync word is used for frame synchronization) for the

coherent detection **(see fig 1 for coherent detection)**.

It would have been obvious to one of the ordinary skill in the art at the time of the

invention was disclosed to modify the coherent detector disclosed by Mat, as taught by

Baker, since stated in Col 1 lines 30-35 of Baker, that such a modification will fulfill the

need for a coherent detector that can determine the initial constellation point rapidly and

track the rotating constellation.

Regarding claim 22,   Jasper discloses wherein said pilot symbol portion

and said sync word portion are transmitted alternately in said block **(fig 2, notice sync**

portion occurs in 202, and then pilot portion is transmitted throughout the rest of

the block, hence alternately).

Regarding claim 23,   Jasper discloses transmitting **(fig 3 shows a**

transmitter), on a transmitting side **(fig 3 shows a transmitter)**, a block **(fig 2 shows a**

block of data) consisting of a plurality of known pilot symbols **(fig 2, 203 and Col 3**

lines 54-56, "predetermined pilot symbols (203) inserted at selected intervals") at

every slot **(fig 2 shows a typical timeslot, where data, pilot and sync symbols are**

included), a predetermined number of said slots forming a frame **(fig 2, and Col 3**

lines 48-50, which teaches TDM, which is known in the art to have a

predetermined number of slots forming a frame);

receiving, on a receiving side **(Col 3 lines 51-53 teaches a receiver)**, said blocks each consisting of said pilot symbols **(fig 2, 203 and Col 3 lines 54-56, "predetermined pilot symbols (203) inserted at selected intervals")**; and

wherein said block **(fig 2 shows a block of data)** consisting of pilot symbols **(fig 2, 203 and Col 3 lines 54-56, "predetermined pilot symbols (203) inserted at selected intervals")** consists of a known pilot symbol portion **(fig 2, 203 and Col 3 lines 54-56, "predetermined pilot symbols (203) inserted at selected intervals")** and a sync word portion for frame alignment **(fig 2, see sync data according to shade and Col 3 lines 51-53, "Sync symbols 202 are provided at the beginning of the time slot to allow a receiver to determine exact position in the symbol stream...")**,

Jasper does not specifically disclose means for carrying out coherent detection using the received blocks and wherein said means for carrying out coherent detection carries out the coherent detection using said known pilot symbol portion.

Mat discloses means for carrying out coherent detection **(Col 7 lines 3-6 shows coherent detectors)** by using the received blocks **(Col 7 lines 3-11, coherent detectors using known symbols, such as the unique word and pilot symbols)**

wherein said means for carrying out coherent detection **(Col 7 lines 3-6 shows coherent detectors)** carries out the coherent detection using said known pilot symbol portion **(Col 7 lines 3-11, coherent detectors using known symbols, such as the unique word and pilot symbols)**.

It would have been obvious to one of the ordinary skill in the art at the time of the

invention was disclosed to modify the process of receiving of Jasper, as taught by Mat,

since stated in Col 7 lines 8-19 of Mat, that such a modification will provide a signal

detection using coherent detection and employing a fading estimation scheme that

takes into account the generation process of the fading frequency selectivity and exploit

the benefit of the offset pilot location thus overcoming the disadvantages of prior art as it

pertains to frequency selective fading.

Although Mat discloses carrying out coherent detection using sync symbols **(Col

7 lines 3-11, coherent detectors using known symbols, such as the unique word

and pilot symbols),** the combined teachings of Jasper and Mat do not explicitly

suggest employs, after establishing the frame alignment using said sync word portion,

said sync word portion for the coherent.

Baker discloses employs, after establishing the frame alignment **(fig 1, where

the mixing of the received signal with the NCO is equivalent to frame

synchronization, and this mixing is the first process done in the coherent

detection, thus the completion of coherent detection is achieved after this

process of synchronization)** using said sync word portion **(Col 2 lines 30-35, where

the sync word is used for frame synchronization),** said sync word portion **(Col 2

lines 30-35, where the sync word is used for frame synchronization)** for the

coherent detection **(see fig 1 for coherent detection).**

It would have been obvious to one of the ordinary skill in the art at the time of the

invention was disclosed to modify the coherent detector disclosed by Mat, as taught by

Baker, since stated in Col 1 lines 30-35 of Baker, that such a modification will fulfill the

need for a coherent detector that can determine the initial constellation point rapidly and

track the rotating constellation.

Regarding claim 24,   Jasper discloses wherein said pilot symbol portion

and said sync word portion are transmitted alternately in said block **(fig 2, notice sync**

portion occurs in 202, and then pilot portion is transmitted throughout the rest of

the block, hence alternately).

Regarding claim 25,   Jasper discloses receiving a block **(fig 2 shows a block of**

data) consisting of a plurality of known pilot symbols **(fig 2, 203 and Col 3 lines 54-56,**

"predetermined pilot symbols (203) inserted at selected intervals"), which has

been transmitted at every slot **(fig 2 shows a typical timeslot, where data, pilot and**

sync symbols are included), a predetermined number of said slots forming a frame

(fig 2, and Col 3 lines 48-50, which teaches TDM, which is known in the art to have

a predetermined number of slots forming a frame); and

wherein said block **(fig 2 shows a block of data)** consisting of said pilot symbols

(fig 2, 203 and Col 3 lines 54-56, "predetermined pilot symbols (203) inserted at

selected intervals") consists of a known pilot symbol portion **(fig 2, 203 and Col 3**

lines 54-56, "predetermined pilot symbols (203) inserted at selected intervals")

and a sync word portion for flame alignment **(fig 2, see sync data according to shade**

and Col 3 lines 51-53, "Sync symbols 202 are provided at the beginning of the

time slot to allow a receiver to determine exact position in the symbol stream…"),

Jasper does not specifically disclose means for carrying out coherent detection

using the received blocks and wherein said means for carrying out coherent detection

carries out the coherent detection using said known pilot symbol portion.

Mat discloses means for carrying out coherent detection **(Col 7 lines 3-6 shows**

coherent detectors) by using the received blocks **(Col 7 lines 3-11, coherent**

detectors using known symbols, such as the unique word and pilot symbols)

wherein said means for carrying out coherent detection **(Col 7 lines 3-6 shows**

coherent detectors) carries out the coherent detection using said known pilot symbol

portion **(Col 7 lines 3-11, coherent detectors using known symbols, such as the**

unique word and pilot symbols).

It would have been obvious to one of the ordinary skill in the art at the time of the

invention was disclosed to modify the process of receiving of Jasper, as taught by Mat,

since stated in Col 7 lines 8-19 of Mat, that such a modification will provide a signal

detection using coherent detection and employing a fading estimation scheme that

takes into account the generation process of the fading frequency selectivity and exploit

the benefit of the offset pilot location thus overcoming the disadvantages of prior art as it

pertains to frequency selective fading.

Although Mat discloses carrying out coherent detection using sync symbols **(Col**

7 lines 3-11, coherent detectors using known symbols, such as the unique word

and pilot symbols), the combined teachings of Jasper and Mat do not explicitly teach

employs, after establishing the frame alignment using said sync word portion, said sync

word portion for the coherent.

Baker discloses employs, after establishing the frame alignment **(fig 1, where

the mixing of the received signal with the NCO is equivalent to frame

synchronization, and this mixing is the first process done in the coherent

detection, thus the completion of coherent detection is achieved after this

process of synchronization)** using said sync word portion **(Col 2 lines 30-35, where

the sync word is used for frame synchronization)**, said sync word portion **(Col 2

lines 30-35, where the sync word is used for frame synchronization)** for the

coherent detection **(see fig 1 for coherent detection)**.

It would have been obvious to one of the ordinary skill in the art at the time of the

invention was disclosed to modify the coherent detector disclosed by Mat, as taught by

Baker, since stated in Col 1 lines 30-35 of Baker, that such a modification will fulfill the

need for a coherent detector that can determine the initial constellation point rapidly and

track the rotating constellation.

<u>**Regarding claim 26,**</u>   Jasper discloses wherein said pilot symbol portion

and said sync word portion transmitted alternately in said block **(fig 2, notice sync

portion occurs in 202, and then pilot portion is transmitted throughout the rest of

the block, hence alternately)**.

Conclusion

9.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER P. GREY whose telephone number is (571)272-3160. The examiner can normally be reached on 10AM-7:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Moe Aung can be reached on (571)272-7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Aung S. Moe/   /Christopher P Grey/
Supervisory Patent Examiner, Art Unit 2474   Examiner, Art Unit 2474